GEOGRAPHIC NEWS BULLETINS

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General Headquarters, Washington, D. C.

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Photograph by Leon van Dyke

THE HWANG HO, "CHINA'S SORROW," IS ALSO CHINA'S FRIEND

Raftsmen take time off for a cooling plunge into the muddy torrent. For a water-wing they use an inflated sheepskin, one of the many that keep rafts afloat on the long, shadeless journey down the river. Chinese literature reveals that 2,000 years ago the upper reaches of the Hwang Ho were navigated by primitive rafts identical with those in use to-day (see Bulletin No. 2).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Stratosphere Flyers Get Hubbard Gold Medals

Hubbard Gold Medal Given to Anne Lindbergh

FLYERS of the stratosphere balloon, *Explorer II*, Captain Albert W. Stevens, commander, and Captain Orvil A. Anderson, pilot, received Hubbard Gold Medals, highest award of the National Geographic Society, at a special ceremony in Constitution Hall, Washington, D. C., December 11.

The flyers were given the awards "for distinguished achievement in scientific research." The medals were presented to them by General John J. Pershing, General of the Armies of the United States, and a life trustee of the National Geographic Society. General Pershing was introduced by Dr. Gilbert Grosvenor, President of The Society.

Only Ten Others Have Been So Honored

Only ten other people have received these medals in the 47 years since The Society was founded. Among them are the distinguished flyers, Colonel and Mrs. Lindbergh, and Admiral Richard E. Byrd.

In presenting the Hubbard Gold Medals to the flyers, General Pershing stated that the studies of this expedition in at least a score of scientific fields, studies bearing upon weather forecasts and cosmic ray research, upon farming problems and radio, illustrate the diverse activities of the National Geographic Society and the useful function of the United States Army in peace time.

In connection with the ceremonies, striking pictures from high in the stratosphere were displayed, showing the earth's actual curvature on the horizon more clearly than ever before, and revealing how the world looks from the greatest height at which photographs ever have been made.

Photographs were taken by Captain Stevens while the *Explorer II* was at its ceiling, 72,395 feet above South Dakota, a new world altitude record.

Infra-Red Light Pierces Haze

The picture showing the lateral curvature of the earth includes a stretch of the horizon 220 miles in length. This represents nearly three degrees of a circle—close to 1/100th of the total circumference of the earth. The curve of the horizon is easily noticeable when the picture is projected on a screen—photographic evidence that the world is round. When the edge of a ruler is laid along the horizon line the curvature is even more plainly visible.

In taking this picture the camera used by Captain Stevens "saw" a distance of about 300 miles, far beyond the range of the human eye. The horizon showing in the photograph is estimated to have been at that distance from the camera. The photograph was taken by infra-red light, which is capable of piercing distant haze. All the other colors of sunlight are shut out of the camera by a red filter in making this kind of long-distance photograph.

The picture shows a vast stretch of western South Dakota, covering more than 33,000 square miles. The Black Hills, from which the flight started and which have an area of about 6,000 square miles, appear as a large dark area at one side of the picture 160 miles in the background. The picture was taken from a position above Parmelee, South Dakota.

The horizon line in the photograph is represented by a stratum of haze estimated to lie about 10,000 feet above the earth. This stratum of haze, however, conforms closely to the sea level surface of the earth and its curvature reflects accurately the curvature of the earth itself.

Rivers Like Delicate Tracery

Both still and motion pictures were taken directly downward from the stratosphere balloon while it was at its ceiling of 72,395 feet, the highest-altitude pictures of the earth ever taken. They reveal the earth as a huge plain marked with tiny checkerboard-like farms and fields. Cutting into the level, smooth farm lands are regions of erosion, with innumerable small stream courses, arroyos and creek beds, forming intricate patterns of delicate tracery like frost on a window pane. Roads appear as thin, knife-edge lines. Towns are practically invisible.

One of the flight's most exciting moments, which came about midnight during the night

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© Donald McLeish

NOT ALL EGYPTIAN ART IS ANCIENT

Craftsmen of Cairo make decorative panels of all sizes, following old Egyptian patterns. They apply the mosaic technique to cloth, carrying out a design by sewing small pieces of various colors to a large background. Such decorations are frequently used to give exotic color to a bare wall or the interior of a tent, and not a few of them find their way into the trunks of souvenir-hunting travelers (see Bulletin No. 5).

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The Hwang Ho, Lashing Tail of China's Flood Dragon

POLITICAL problems have taken second place in the worries of China's Shantung Province. Floods of the Hwang Ho, the Yellow River, recently submerged a dozen counties, and five million refugees face death from starvation or exposure as a result of the river dragon's rage.

Ordinarily the Hwang Ho in wintertime coils peacefully along, caged within an irregular line of dikes by which China has tried to confine it for over a thousand years. It is even pale, lacking most of the yellow loess sediment which gives it its color and its name.

When spring and summer rainclouds, however, pour down upon the peaks of Tibet where the river rises, the Hwang Ho swells to three times its normal size, writhes through the mountain passes, and bursts upon the Great Plain with murderous fury. Vast areas of shifting sand and grass become lakes and marshes. Crops are wiped out in a flash, and humble brown mud homes melt like sugar, leaving millions homeless and hungry.

Zigzag Course Has Had Three Different Endings

The Hwang Ho, or Yellow River, is the lashing tail of China's flood dragon. Almost annually it hurdles its banks, spreads death and desolation in its track, and swallows up rescue parties, refugee boats, and Red Cross workers with grim impartiality.

While the Crusaders were fighting the Moslems in Palestine, the Hwang Ho emptied into the Gulf of Chihli, near Tientsin. Then it twisted its mouth southward 400 miles in a single week, and until 1852 poured its muddy flood into the Yellow Sea. Then it swung clear around the promontory of Shantung, which is its delta, and found its outlet of recent decades. At that time it not only scattered rocks over the land, spoiling many farms, but even damaged its water-relative, the Grand Canal.

The old Hwang Ho goes mad every few years and lashes a million innocents with his swishing tail, but the Shantung coolie, like a modern St. George, enters the lists against the foamy-mouthed dragon and once more confines it within earthen embankments.

The struggle of Yellow River with yellow man is recorded in early histories, with accounts of crude diking efforts, or, as a 14th century Chinese author called it, "repairing the river." Many foreign engineers have studied the problem. For some time the Hwang Ho was assigned a special governor, the River viceroy, and at least a million dollars yearly was spent in trying to keep it under control.

Three Crops Every Two Years

Now dikes are built wide enough to allow for a flood channel, but the river still jumps all fences and takes short cuts along its own bed, or even tries to return to a former course. Then all available man-power is drafted to repair the breaks with "mattresses" of mud on a framework of sturdy millet stalks, or *kaoliang*. And thus the river is caged for a few months longer.

Then the Chinese farmer goes back to growing three crops every two years in soil that has been cultivated for centuries, and he forces Nature to support as many Shantung families to the square mile as pre-war Belgium supported through highly-developed industry.

The Hwang Ho is the second largest river in China, being exceeded in size

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of inflation, could be seen in the motion pictures. A sharp report from under the mass of fabric indicated that something had given way. Careful search revealed a rip nearly 20 feet long. After a hurried consultation with Goodyear-Zeppelin officials and Army balloon specialists present, it was decided that the balloon could be patched. Captain Stevens paid a tribute to the men who did this under extremely adverse conditions.

Narrow Escape after Takeoff

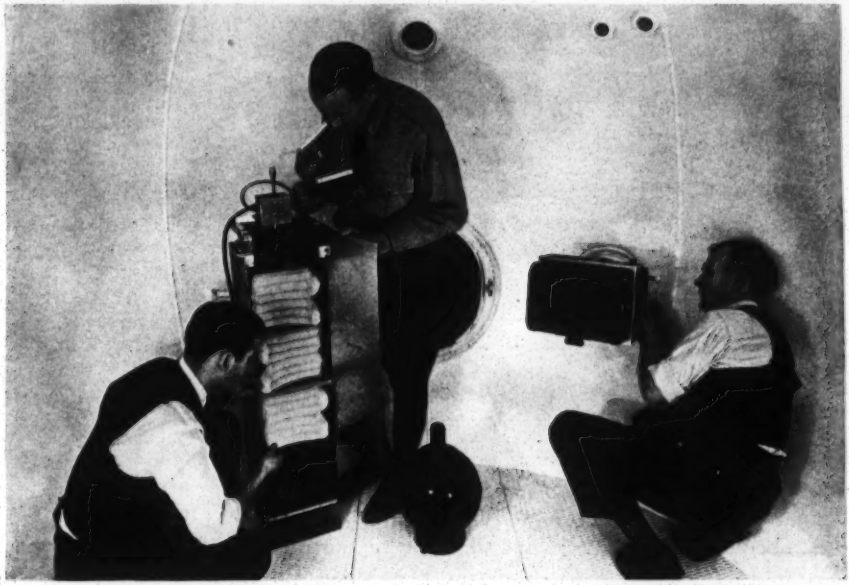
Another trying moment came just as the huge bag, the largest free balloon ever built, was rising from the Stratobowl. Struck by a downdraft of air, it began to lose altitude rapidly. For a moment a crash against the cliffs seemed inevitable, but Captain Anderson finally stopped the descent by releasing ten bags of lead dust ballast, lightening the craft by more than 750 pounds.

Captain Stevens reported that all the scientific instruments worked well, but that it was too early to announce the results obtained. Some of the records taken will require weeks and months of study by scientists from the U. S. Bureau of Standards, the Carnegie Institution, the Bartol Research Foundation, and other cooperating scientific bodies.

Note: Captain Stevens' own story of the flight, "Man's Farthest Aloft," with 40 illustrations, appears in the January, 1936, *National Geographic Magazine*. Photographs showing the earth's curvature will be published in a future edition.

See also "Second Stratosphere Expedition," October, 1935; "Studies Planned for New Stratosphere Flight with Helium," June, 1935; "Society Announces New Flight into the Stratosphere," February, 1935; "Exploring the Stratosphere," October, 1934; "World's Largest Free Balloon To Explore Stratosphere," July, 1934; and "Your Society Sponsors an Expedition To Explore the Stratosphere," April, 1934.

See also in the GEOGRAPHIC NEWS BULLETIN: "Stratosphere Flight Sets New Altitude Record," week of December 9, 1935; "Instruments Hung from Brackets in Newest Stratosphere Cabin," week of April 29, 1935; "Largest Gondola for Stratosphere Flight Completed," week of April 15, 1935; "Helium To Lift New Stratosphere Balloon," week of February 4, 1935; "To Repeat Stratosphere Flight from Black Hills," week of January 7, 1935; and "Stratosphere Flight Yields Valuable Data," week of October 1, 1934.



Photograph by Richard H. Stewart

INSTALLING THE CAMERA THAT "SAW" THE EARTH'S ROUNDNESS

While Captain Stevens inspected the air-conditioning apparatus for the gondola of *Explorer II*, an assistant (right) attached to its own peephole the special aërial camera, loaded with infra-red film, which photographed the horizon. A special red filter shut out from the camera all light rays except the long infra-red ones, which, although invisible to the naked eye, penetrated haze and traveled great distances to register the horizon's curve 300 miles away.

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Radium: A Dr. Jekyll and Mr. Hyde Among Metals

RADIUM, most precious of metals, an ounce of which is worth nearly as much as a ton of gold, recently has been brought to the fore again with the award of the Nobel Prize in chemistry to M. and Mme. Joliot for their work on radioactive elements. Mme. Irene Curie Joliot thus upholds the "radioactive" family tradition, established by her parents' discovery of radium.

This silvery-white substance, which few people ever have seen, is a Dr. Jekyll and Mr. Hyde among the metals. While its principal use is in the treatment of dreaded cancer, in many cases of which it is a saver of life, radium also is capable of causing cancers and a fatal form of anemia when not properly handled. About 30 diseases can be safely treated with radium.

U. S. Has Nearly Half of Present World Supply

It is estimated that there are about 250 grams of radium in the United States at present, nearly half of the total of 600 grams, or one and one-quarter pounds, that has been produced in the world. This quantity, when used to produce the radioactive gas niton, or radon, can supply most of the country's needs.

Perhaps radium's habit of transforming itself into some other metal accounts for the fact that it simply isn't found in deposits large enough to be visible. Instead, it is coyly hidden away in ores, mainly pitchblende, a black ironlike substance, and carnotite, a bright canary yellow ore. Radium, when finally extracted, is no more exciting to look at than baking powder.

Radium first was produced from pitchblende ores of Bohemia in 1898. Since then prospectors have found radium-bearing deposits in many parts of the world. The most recent important "radium strike" was in the Great Bear Lake district in the wilderness of northern Canada, farther north than the Yukon gold fields.

So valuable is the ore that it is profitable to fly out loads of it by airplane to civilization for refining. To-day the world's principal sources of radium are the Great Bear Lake deposits and mines in the Belgian Congo, Africa. The United States' carnotite deposits are found mainly in Colorado, Utah, and Pennsylvania. They are not rich enough to be worth working at present prices, but form a sort of radium reserve, available in case other supplies are cut off. Success in commercial mining of pitchblende in the Belgian Congo has made it almost unprofitable for the United States to compete. In the Congo ores, radium usually exists in a combination with sulphur, chlorine, or bromine.

Worth $1,000,000 per Ounce

Radium is worth about $1,000,000 per ounce at present prices. Gold is now valued at $35 per ounce in the United States, and platinum about the same. In small amounts radium may at times command a price of as much as $75 per milligram, the thousandth part of a gram. In past years its price has been much higher than now, reaching $125,000 per gram during the World War.

Aside from the treatment of cancer, the chief use of radium is in luminous paint, used on watch and clock dials, for electric switches and keyholes, for indicators on airplane instruments, and, in wartime, for gun sights and compass cards where lights would betray presence of troops.

The radiations which make radium both useful in treating disease and dangerous when handled without protection are caused by the explosion of atoms in the

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only by the well-known Yangtze. Its disastrous flooding has cost the Chinese millions of lives and millions in wealth through the destruction of homes and farm lands, and because of this it has earned such titles as "China's Sorrow," the "Ungovernable," and the "Scourge of the Sons of Han."

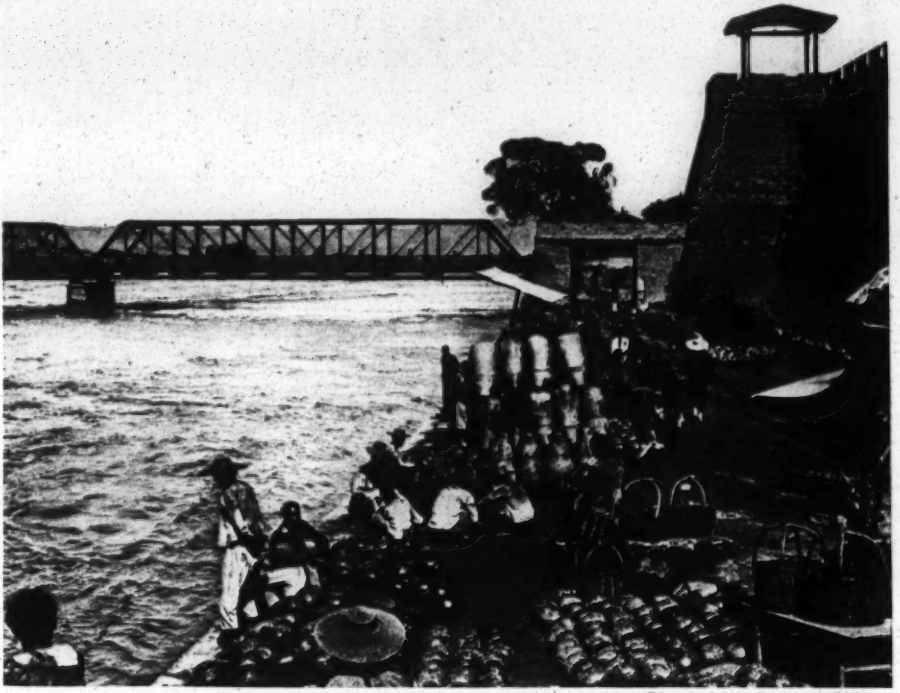
Although it is a wide stream from its headwaters high up in the Kunlun Range in Tibet, all along its 2,500-mile path to the sea, it is not navigable for steamships or other deep-draft craft. Its course is alternately either too swift and broken by turbulent rapids, or too wide and shallow and filled with sand bars.

Yet the Hwang Ho has contributed much to China—it fact, has built much of the Great Plain, which is North China's most fertile spot outside of Manchutikuo. For a long time it was called simply Ho, *The* River. In its valley sprang up China's earliest civilization. It inspired what may have been one of the world's first systems of farm relief, for its floods and subsequent famines brought tax exemption and opening of public granaries to the people it made destitute.

Note: Students interested in the Hwang Ho will find interesting material and photographs in "Raft Life on the Hwang Ho," *National Geographic Magazine*, June, 1932;

See also "From Mediterranean to Yellow Sea by Motor," *National Geographic Magazine*, November, 1932; "The World's Greatest Overland Explorer (Marco Polo)," November, 1928; "Farmers Since the Days of Noah," April, 1927; and "Shantung—China's Holy Land," September, 1919.

Bulletin No. 2, January 6, 1936.



Photograph by Leon van Dyke

TWO WAYS TO CROSS THE YELLOW RIVER AND GET TO MARKET

The bridge, built by American engineers, is a modern means of spanning the Hwang Ho and reaching the riverside market just outside the walled city of Lanchow. As proof that an older way is still in use, a raft of inflated sheepskins stands upright in the middle of the market. Oxhides stuffed with wool are also used, sometimes 500 on a single raft. Many of the watermelons on sale arrived on such craft, with occasional stops to repair "flats" when the sheepskins would scrape rocks.

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Diving for Blessings and Sponges at Tarpon Springs

FLASH of a gold cross sinking through the blue waters of Springs Bayou, the splashing of divers who leap to recover it and bring it to shore, then the blessing of the Greek Church for the lucky rescuer—January 6 brings Greek Cross Day again to Tarpon Springs, Florida. Thus at Epiphany do the Greek sponge divers enter upon a new year of their dangerous calling.

Colorful pageantry of Old World religious ceremonies, church banners, release of a white dove, parades, and brass bands have, for about thirty years, attracted visitors to Tarpon Springs on Greek Cross Day from far and wide. The fête was transported almost complete from Greece, as were most of the sponge divers or their parents.

Tarpon Springs Is Artists' Choice

Tarpon Springs, the "Pride of Pinellas County" as it calls itself, lies about halfway down the west coast of the Florida peninsula, just above where the Gulf of Mexico bites into it to form Tampa Bay. It contains many miles of navigable waterways—canals, small blue lakes, picturesque Springs Bayou surrounded by a natural amphitheatre, and the Anclote River flowing through the city into the Gulf. Palm-shaded streets are bordered with cottages painted gaily, yet not so gay as the flaming hibiscus and poinsettias that encircle them, or the purple flowering bougainvillea vines almost covering them.

The natural beauty of this semi-tropical city early attracted the distinguished American artists George Inness and his son. George Inness, Jr., explained that he esteemed Tarpon Springs because of its picturesqueness. As a result, the Church of the Good Shepherd proudly displays two valuable Inness paintings.

Artists not alone enjoy the city. Sportsmen come there for tarpon fishing and golf, and one major league baseball team has chosen it as a winter training ground.

Mystery still surrounds the lithia springs which give the city part of its name. Although soundings have reached 200 feet, their real depth has not been fathomed. They take their place among the "bottomless" springs of Florida, even though engineers have suggested that they are an outlet for Lake Butler, several miles away, from which the municipal water supply is drawn. Strangely enough, the water level of the springs rises and falls with the tide in the Gulf.

Sponge Capital of the World

A unique feature of Tarpon Springs is the cooperative Sponge Exchange, the only one in the United States and the largest in the world. Here captains of diving crews sell their catch to packers. In good seasons they handle perhaps a million dollars' worth of business. The Exchange's open quadrangle is surrounded by large covered stalls, in which the captains store their sponges, dragging them out into the sunlight to dry and expose their texture, then locking them at night behind wooden stall doors with barred grills for ventilation.

While natural beauty and agreeable climate may have made Tarpon Springs a favorite resort, a lucky accident made it the sponge capital of the world. Tradition reports that in 1873 fishermen, catching turtle off Anclote Key in the Gulf, caught sponges by mistake. Formerly the Key West region had been the best

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radium. Slowly radium destroys itself by these explosions, though it is estimated that it takes from 1,690 to 2,500 years for a piece of radium to break itself down halfway.

The exploding atoms send out three different kinds of radiations or rays—alpha particles, positively charged, travelling up to 12,000 miles per second; beta rays, negatively charged electrons travelling even faster, with almost the speed of light; and gamma rays, electro-magnetic waves which also travel nearly as fast as light.

In treating diseases, instead of the dangerous and expensive radium itself, a gaseous emanation or by-product of radium usually is used, because it is far more radioactive than radium. One of the most frequently used is radon, a gas which can be released from radium by heating or dissolving it. A very small quantity of radon is as radioactive as a large amount of radium. Radon can be produced without the original radium being scattered or lost.

Note: See also "Colorado, A Barrier That Became a Goal," *National Geographic Magazine*, July, 1932; "Interviewing the Stars," January, 1925; "Prizes for the Inventor," February, 1917; "The World's Debt to France," November, 1915; and "The Nation's Undeveloped Resources," February, 1914.

Bulletin No. 3, January 6, 1936.

Photograph by Frank J. Magee, R. N. V. R.

RADIUM ALSO CURES JUNGLE BACKWARDNESS

Discovery of radium in pitchblende of the Katanga District of the Belgian Congo transformed several such native kraals into prosperous towns, provided with electricity, running water, ice, and golf links. Ore is shipped to Belgium, where the radium is extracted. Because resources of the Katanga District are so valuable, it has been suggested that Belgium pay her war debt in radium instead of gold. Copper also is mined there.

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Cairo, City of Minarets, Welcomes a Change in Government

CAIRO has seen many governments come and go. Recently it saw one come back. Egyptian pharaohs, Greek generals, Roman emperors, Fatimid caliphs, Napoleon, British troops—all have paraded triumphantly through Cairo and seized Egypt's government. Now the 1923 Constitution is being restored, and Cairo, the capital, has played a leading rôle again.

Cairo, Africa's New York, is the largest city of that continent, with over a million permanent inhabitants and a constant stream of visitors. Its location on the north bank of the Nile, just before that river sends two arms around the spreading delta, has won for Cairo the name: "diamond on the handle of the fan of the delta."

It is one of the most cosmopolitan cities in the world. Its newsboys in black skullcaps sell thirty-eight newspapers, including twelve Arabic dailies, eight printed in French, seven in Greek, three in Italian, and two in English.

Past and Present Live in Twin Cities of Cairo

The ancient citadel, begun in 1176 by Saladin with stones from Giza's smaller pyramids, offers a fine view of the city, which lies along the Nile banks for several miles. The river's silver is dotted with islands—Gezira, a famous sports resort, and Roda, where Cairenes say that Pharaoh's daughter discovered the infant Moses. At Roda's southern end stands the Nilometer, a pillar marked to measure the annual Nile floods.

The city's expanse of flat-roofed houses is like a desert, relieved with oases of walled gardens whose palm trees shade rose trees and flowering hibiscus. From roof-level rise a myriad of slim minarets, most of them delicately shaded pink or brown. Cairo has also been termed "the city of a thousand minarets" (see illustration, next page).

A second glance reveals that Cairo is in reality two cities: an Old Cairo of noisy bazaars and shadowy twisting streets, balcony-overhung, and a spacious new area built on European lines. Modern Cairo has electric lights, taxicabs, and several colleges, including an American University which gives foreign students an opportunity to study oriental subjects. Laid out with wide streets like French cities, the new Cairo has modern residences and fine hotels in which Europeans lead gay social lives.

Legends Linger in Old Cairo

In the Arab section of Cairo, visitors still see houses four or five stories high crowded together along narrow streets that are hardly more than alleys. From projecting latticed windows women can look unseen upon the people, camels and donkeys passing and repassing in the street below.

Mingled with tourists in sun helmets and Cairenes in European dress, are men in red caps and flowing robes, and an occasional veiled woman with a baby astride her shoulders. Many characters look as if they might have stepped from "The Arabian Nights": snake charmers with baskets of cobras, lemonade sellers carrying glittering brass urns, boys whose donkeys sometimes wear red saddles and silver necklaces.

There are over four hundred mosques in Cairo, more than enough for a devout Moslem to worship in a different mosque every day in the year. Christians are outnumbered by Moslems five to one.

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known sponge grounds outside of the Mediterranean. But thereafter Tarpon Springs became the base for sponging in the Bay Grounds, an area in excess of 5,000 square miles. It lies largely beyond the three-mile limit and is therefore subject to little Federal regulation. It is maintained, however, that sponge beds are not being depleted.

For years sponges met their fate by "hooking," a procedure that required little equipment and only two men in a boat. The hooker scanned the ocean bed through a "water telescope," simply a tin bucket with a glass bottom, and fished up visible sponges with a three-tined hook on a long pole.

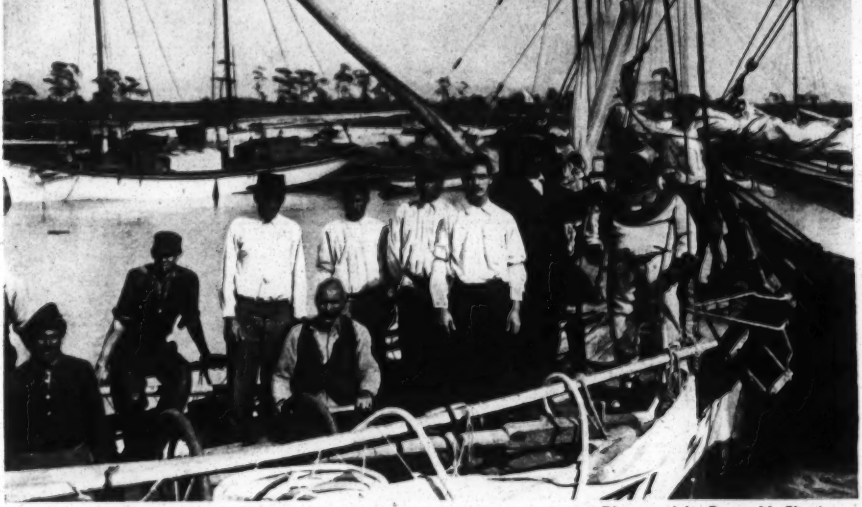
New Method Imported from Old World

About thirty years ago a Greek colony transplanted Mediterranean equipment and diving methods to the Gulf. A small sloop was imported from Greece as a pattern for diving boats. Expert Greek divers, swarthy and mustachioed, arrived with their families in a "sponge rush."

Now the dock at Anclote Harbor is lined with the sponge fleet and teaming with boats of every kind, from gasoline launches to little two-men "hooking dinghies." Diving sloops are brightly painted, and are slightly convex, like a very fat crescent moon. An essential feature of each vessel is the sturdy jointed wooden ladder by which the diver makes his clumsy entrances and exits, burdened down with 200 pounds of helmet, armor, waterproof, suit, and lead-soled shoes. Nearby are boatyards, the Sponge Exchange and a cluster of restaurants and curio shops displaying lurid paintings of divers fighting off sharks.

Note: See also "Cirenaica, Eastern Wing of Italian Libia," *National Geographic Magazine*, June, 1930; "Florida—The Fountain of Youth," January, 1930; "Here and There in Northern Africa," January, 1914; and "Federal Fish Farming," May, 1910.

Bulletin No. 4, January 6, 1936.



Photograph by George M. Chapin

THEY REAP THEIR HARVEST OF SPONGES BENEATH THE SEA

In cumbersome diving suits, these Greek sponge divers of Tarpon Springs lunge along on the ocean floor, from 60 to 120 feet below the surface, capturing live sponges. They can stay under water at the greatest depths for only about 20 minutes. Then, after "talking" to the surface crew by a system of jerks on the lifeline, they are hauled back up to the boat.

Many of the mosques have interesting legends. Sultan Hasan Mosque is said to be the finest in Cairo. Legend says that to prevent a rival to it, the architect's hand was cut off at the king's orders (see illustration below).

The Mosque of Ahmed Ibn Tulun, one of the world's oldest and finest Moslem buildings, has a spiral staircase built around the outside of its minarets, up which it is said the Sultan Ibn Tulun used to ride his favorite horse.

How the Sphinx Lost Its Nose

Cairo is linked with many names famous in history. The Cairo Museum, which houses the finest known collection of Egyptian antiquities, exhibits furniture and ornaments from the tomb of Tutankhamen. Near Cairo, Napoleon won the Battle of the Pyramids over the Mameluke horde. The nose of the Sphinx is said to have been shot away by French cannon fire.

From Cairo, trolleys now carry tourists the five miles to the Pyramids of Giza. Beside the rails, on a splendid road lined with lofty trees, throng travelers in motor cars and on donkeys and camels. The highway was hastily constructed at the time of the opening of the Suez Canal so that Empress Eugénie might drive easily to the Pyramids.

See also "The Geography of Money," *National Geographic Magazine*, December, 1927; "Flying Over Egypt, Sinai and Palestine," September, 1926; "The Land of Egypt," March, 1926; "Cairo to Cape Town, Overland," February, 1925; "Peoples and Places of Northern Africa" and "Along the Nile, Through Egypt and the Sudan," October, 1922; "Adventures with a Camera in Many Lands," July, 1921; and "From London to Australia by Aeroplane," March, 1921.

Bulletin No. 5, January 6, 1936.

© *Publishers' Photo Service*

MOSQUE AND MARKET SIDE BY SIDE IN CAIRO

Hasan Mosque and the sugar cane bazaar are comfortable next-door neighbors. Cairo has many markets, known locally as *souks*, usually devoted to one commodity, such as brassware, copperware, or slippers. Sugar cane has become more profitable produce since scientific irrigation was introduced. One type of sugar cane, however, has no doubt always been popular, for it is the Egyptian substitute for chewing gum.